

# 2009

## Green Jobs: Survey of the Energy Industry



### ***Relevant Trends, Opportunities, Projections & Resources***

Presented by the Association of Energy Engineers

Profile of Respondents

Survey Results

Policy & Trends

Salary & Experience Levels

Job Titles & Resources

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# Green Jobs: Survey of the Energy Industry

The Association of Energy Engineers (AEE), a nonprofit professional society of over 9,500 members, issued a survey to its members to determine the need for Green Jobs, Energy Industry Potential and Salary Data. The results represented are based on 978 responses and are outlined in this report. AEE was founded in 1977 and its mission is “to *promote the scientific and educational interests of those engaged in the energy industry and to foster action for sustainable development.*”

## Profile of Respondents

- Eighty-seven percent (87%) have graduated from a four-year accredited college.
- Thirty-nine percent (39%) have a post-graduate degree from an accredited college.
- Thirty-seven percent (37%) are registered Professional Engineers (P.E.s) or Architects.
- Seventy-nine percent (79%) are Certified in one or more of the following categories:

1. **Certified Energy Manager (CEM®)**
2. **Energy Manager in Training (EMIT®)**
3. **Certified Sustainable Development Professional (CSDP®)**
4. **Certified Green Building Engineer (GBE®)**
5. **Business Energy Professional (BEP®)**
6. **Certified Lighting Efficiency Professional (CLEP®)**
7. **Certified Power Quality Professional (CPQ®)**
8. **Certified Building Commissioning Professional (CBCP®)**
9. **Distributed Generation Certified Professional (DGCP®)**
10. **Certified Measurement and Verification Professional (CMVP)**
11. **Certified Demand-Side Measurement Professional (CDSM®)**
12. **Certified Cogeneration Professional (CCP®)**
13. **Certified Energy Procurement Professional (CEP®)**
14. **Certified Indoor Air Quality Professional in Training (CIAQT®)**
15. **Certified Testing, Adjusting Balancing Professional (CTAB®)**
16. **Certified Geo-Exchange Designer (CGD®)**
17. **Certified Carbon Reduction Manager (CRM®)**

# Section One: Green Jobs

There is a growing demand for energy efficiency, green collar and renewable energy professionals in light of the following trends:

## **1. Survey Results**

- Forty-one percent (41%) of the energy professionals who were surveyed plan to retire in the next ten years.
- Seventy-two percent (72%) of energy professionals indicate a heightened shortage of qualified professionals in the energy efficiency and renewable energy fields in the next five years.
- Seventy percent (70%) of energy professionals indicate a need for national and state training for "Green Jobs" to address job shortages that are impairing growth in green industries, such as energy efficient buildings and construction, renewables, electric power, smart grid, energy efficient vehicles and biofuels development.

## **2. The American Recovery and Reinvestment Act of 2009 (ARRA) will fund:**

### **A) Energy Efficiency**

- \$3.1 billion for State Energy Programs which will encourage states to improve building energy improvement and retrofits.
- \$5 billion for weatherization of low income housing.
- \$4.5 billion for Green Federal Buildings.
- \$3.6 billion for the Department of Defense for energy efficient projects and facilities upgrade.
- \$3.2 billion for Energy Efficiency and Conservation Block Grants to help state and local governments implement energy efficiency.
- \$500 million dollars for job training, and programs to prepare individuals for careers in energy efficiency and renewable energy.

*According to the **Alliance to Save Energy**, the energy efficiency measures will create 100,000 or more new energy jobs in the next two years. [www.ase.org](http://www.ase.org)*

## B) Solar Energy

The American Recovery and Reinvestment Act contains provisions for:

- **Renewable Energy Grant Program:** Offers Department of Energy grants equal to thirty percent (30%) of the cost of solar projects started in the next two years, including large-scale utility projects. This is a critical alternative to solar tax credits that are not functioning as Congress intended in the current economic climate.
- **Loan Guarantee Program:** Creates a new, streamlined loan guarantee program to support financing of renewable energy systems, including solar energy technology.
- **Manufacturing Investment Credit:** Creates a thirty percent (30%) investment tax credit for facilities engaged in the manufacture of renewable energy property or equipment.

*According to the Solar Energy Industries Association a total of 119,000 jobs over the next two years will be created for solar panel installation, manufacturing components and solar power plant construction.*  
*www.seia.org*

## C) Smart Grid/Advanced Battery/Energy Efficiency:

- \$30 billion will be provided for such initiatives as a new, smart power grid, advanced battery technology, and energy efficiency measures. According to the fact sheet, 500,000 energy jobs will be created. *Source: [Fact Sheet of Speaker Nancy Pelosi](#) – Wall Street Journal*

## D) Growing Energy Market

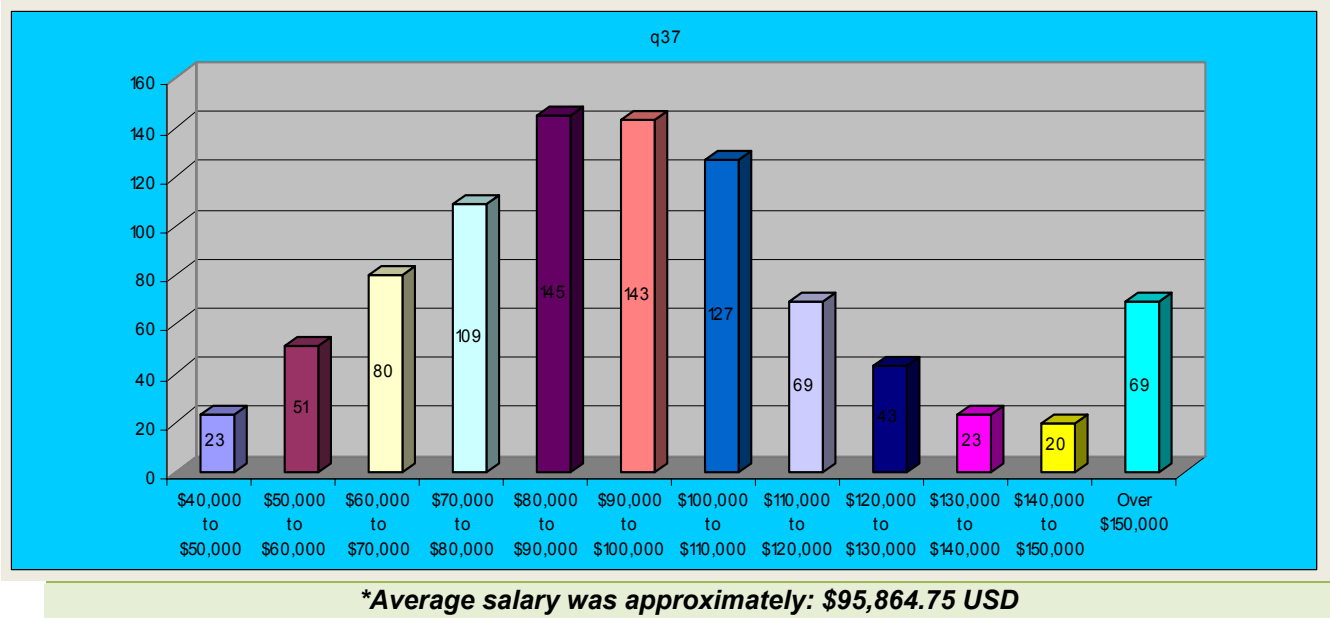
- The revenue for the energy management services market in North America in 2008 was \$20.35 billion (USD) and is projected to double to over \$40 billion (USD) by 2013 due to favorable new government legislations and increased knowledge about the benefits of energy management. *Source: [Frost & Sullivan](#)*

## Section Two: Salary Survey

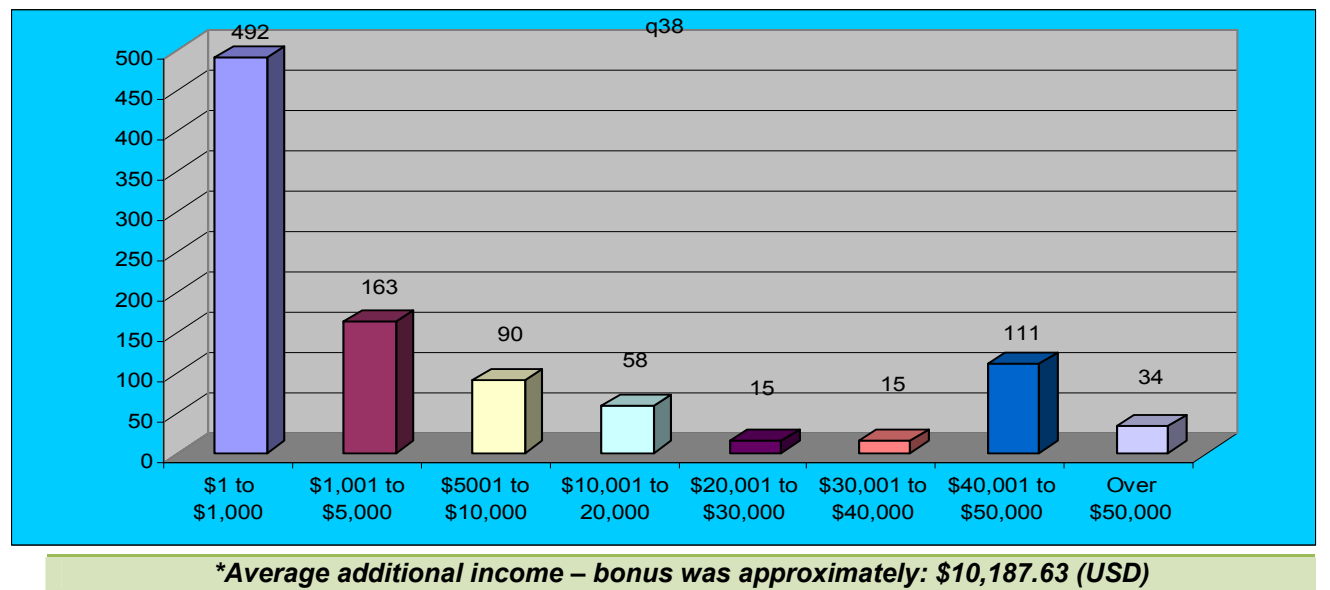
The information in this section is based on the salary survey conducted by the Association of Energy Engineers.

### **1. Salary**

The salary is for full time employment and excludes bonus, overtime and fees from secondary employment. Salaries are effective as of January 1, 2009:



### **2. Bonus-** Bonuses received in by respondents:



### 3. Years of Experience of Energy Professionals

**0-5 Years: 11%**  
**6-10 Years: 7%**  
**11-15 Years: 7%**  
**16-20 Years: 14%**  
**21-25 Years: 19%**  
**26-30 Years: 20%**  
**31-35 Years: 12%**  
**Over 36 Years: 10%**

### 4. Locations of Employment

**Northeast: 28%**  
**Mid-Atlantic and Southeast: 21%**  
**Northern Mid-West: 18%**  
**Southern Mid-West: 18%**  
**West and Pacific Northwest: 15%**

## **Section Three: Employment Opportunities & Papers**

The Association of Energy Engineers maintains a career web site detailing energy, green, sustainable and power positions and jobs available as well as a resume databank with individuals seeking employment. Details are indicated at <http://www.aeecenter.org/jobs>

There is also access to an energy industry dictionary of terms, free access to energy – green white papers, industry news portal, as well as professional reference books. [www.energyvortex.com](http://www.energyvortex.com)

## **Section Four: Training Opportunities**

The Association of Energy Engineers offers a variety of professional training and re-training programs including:

- Training Seminars, Conferences & Industry Networking (Energy, Sustainability, Energy Auditing, Power, Green Facilities, Certification Programs)
  - [www.aeecenter.org/realtime](http://www.aeecenter.org/realtime) (Online training seminars)
  - <https://www.aeecenter.org/seminars/calendar.htm> (Live seminar training)
  - [www.aeecenter.org/shows](http://www.aeecenter.org/shows) (Energy Industry Conferences & Networking Events)

## Training Partnerships:

The Association of Energy Engineers is currently working with a cross-section of accredited institutions, organizations and Universities to offer additional energy management, green, sustainable, renewables and industry training programs. Featured programs include:

## UC DAVIS EXTENSION

CONTINUING AND PROFESSIONAL EDUCATION

The Association of Energy Engineers (AEE) has a Memorandum of Understanding with UC Davis University Extension (UCDE) to advance the knowledge and professionalism in the field of energy management. As an adjunct to the Certified Energy Manager (CEM®) and Business Energy Professional (BEP®) program AEE pleased to be an official sponsor of the **U.C. Davis University Energy Resource Management Certificate program**. This initiative aims at enhancing student's involvement and increases their role in the growing energy management discipline. The course will serve as a solid foundation for students to move towards obtaining their CEM or BEP Certification. For more information on the U.C. Davis certificate program [CLICK HERE](#). UC Davis Extension is the professional and continuing education branch of UC Davis and is a link to the many resources students can only get from the University of California.



The Clean Energy & Renewable Energy Project Feasibility Analysis Training Series. AEE is adding a series of nine courses focusing on Clean Energy/Renewable Energy Project Feasibility Analysis to its 24/7 Online Seminar Program via training partnership with Willis College. Included in each of these courses is an in-depth overview of relevant technologies and projects, system costs, implementation savings, and design considerations, as well as theory on using related tools to conduct a project feasibility analysis. To learn more about these courses [click here](#).



AEE has teamed up with the University of Wisconsin -Madison Engineering Professional Development Department to offer Fundamentals of Lighting Efficiency training seminar on a real-time, online basis. Presented in a series of six two-hour time modules, this program is designed to provide comprehensive professional training in the design and application of energy-effective lighting systems, with emphasis on: Evaluating lighting systems through effective audits, Achieving energy-effective lighting systems with high regard to lighting quality and occupants, Examining the latest lighting products for your applications, Performing lighting calculations to obtain proper light levels, Evaluating and implementing effective lighting control strategies, Reviewing environmental impacts of lighting efficiency projects, Calculating and documenting savings achieved through lighting improvements, Assuring compliance with building energy codes, and Implementing effective lighting maintenance practices. For more information on this programs, please refer to [online training here](#).



AEE Partners the Green Building Engineer Certification (GBE™) Program with US EPA ENERGY STAR Challenge. AEE's participation in the ENERGY STAR Challenge – Build a Better World 10% at a Time is a natural extension of AEE's efforts to encourage its members to reduce energy usage in buildings by 10% or more. AEE is committed to provide training and certification opportunities to help the profession meet the ENERGY STAR Challenge ahead. To find a Professional Engineer (P.E.) and/or GBE, please refer to EPA's online directory: [http://www.energystar.gov/index.cfm?fuseaction=PE\\_DIRECTORY](http://www.energystar.gov/index.cfm?fuseaction=PE_DIRECTORY)



#### **U.S. Green Building Council**

The Association of Energy Engineers is a qualified education provider under the U.S. Green Building Council educational program and its programs are featured in the [GREENBUILD 365 course catalogue](#). Whether you are a design, construction or real estate professional, an educator or student, or a LEED AP, Greenbuild365's rich variety of educational offerings will inform your journey from novice to expert and beyond. Information on a broad range of green building topics is available in formats tailored to your knowledge level and preferred learning style, whether you're looking for in-person interaction, online courses you can take in the comfort of your own home, or do-it-yourself research through an extensive online media library.



The Georgia Tech Enterprise Innovation Institute works with Georgia enterprises to help them compete nationally and internationally. By calling on the resources of Georgia Tech – one of the world's leading engineering, technology and research universities – our team can keep you current with the leading research, methods, technology and more in your industry. The Certified Energy Manager (CEM) Program is recognized by the [Georgia Tech Enterprise Innovation Institute](#) and they have several faculty on staff with CEM Certification.



## Section Five: Green Jobs, Energy Jobs & Titles

There are many currently many “green collar” jobs which exist in the current marketplace. The job titles listed below are typical energy, sustainable, green, environmental and industry jobs based on the actual survey responses of AEE members and participants of AEE programs. These are some of the hot growth areas for professional entering or transitioning into the energy – green field.

### **A**

Account Manager/Executive  
Account Manager – Building  
Automation Systems Sales  
Advisor for Management and Energy  
Agency Energy and Environmental  
Manager

Application Engineer/Technician  
Architect  
Auditor  
Automated Controls Technician

### **B**

Building Automation Systems Engineer  
Building Consultant/Engineer  
Building Control Specialist  
Building Energy Engineer  
Building Energy Analyst

Building Services Engineer  
Business Development Manager  
Business Services Engineer  
Business Unit Energy Services

### **C**

Campus Energy Manager  
Carbon Consultant  
Carbon Reduction Manager  
Central Plant Engineering Manager  
Certified Energy Manager  
Certified Geothermal Designer  
Chief of Energy Engineering  
Certified Energy Auditor  
Chief Operations and Maintenance  
Chiller Team Manager  
Civil Engineer  
Climate Change Consultant  
Climate Initiative Program Director  
Cogeneration Manager  
Command Utility Energy Engineer  
Commercial Engineering Manager  
Commercial and Industrial Energy  
Services Engineer

Commercial Energy Management  
Consultant  
Commissioning Manager  
Commissioning Engineer  
Commissioning Technician  
Commercial/Industrial Services Manager  
Compressed Air Specialist  
Conservation Engineer  
Conservation Program Engineer  
Construction Manager  
Construction Manager/Designer  
Construction Project Manager  
Construction Services Manager  
Construction/Facilities Manager  
Consultant  
Consulting Engineer  
Controls and Commissioning Manager  
Controls and Energy  
Controls Engineer

Controls Manager  
Controls Specialist  
Coordinator of Environmental Services  
Coordinator of Infrastructure  
Coordinator of Energy Management  
Coordinator of Residential Energy Programs  
Corporate Director Engineering and Construction  
Corporate Director of Energy Management  
Corporate Director of Energy and Environmental Services

Corporate Director Plant Operations  
Corporate Energy Coordinator  
Corporate Energy Director  
Corporate Energy Management Leader  
Corporate Energy Manager  
Corporate Facilities/Energy manager  
Corporate Facilities Manager  
Corporate Facilities Engineer  
Corporate Manager of Building Operations  
Corporate Project Manager  
Corporate Utilities Manager

## D

Design Engineer  
Design Build/Energy Engineer  
Design Manager  
Design/Energy Engineer  
Development Engineer  
Distributed Energy Manager  
Distribution Standards Engineer

Demand-Side Management Coordinator  
Demand-Side Management Engineer  
Demand-Side Management P&E Specialist  
Demand-Side Management Program Consultant

## E

Electric Engineering Officer  
Electric Meter Relay Technician  
Electric Utility Analyst  
Electric Utility Project Coordinator  
Electrical & Energy Manager  
Electrical & Instrument Engineer  
Electrical and Controls Engineer  
Electrical and Mechanical Engineer  
Electrical Consultant Engineer  
Electrical Coordinator  
Electrical Design Engineer  
Electrical Designer  
Electrical and Automation Engineer  
Electrical Engineer  
Energy Engineer  
Energy Manager  
Energy & Sustainability Program Manager  
Energy & Commissioning Engineer

Energy & Environment Engineer  
Energy & Environmental Consultant  
Energy & Environmental Manager  
Energy & Sustainability Solutions Specialist  
Energy & Utilities Manager  
Energy & Water Resource Planner  
Energy Advisor  
Energy Analyst  
Energy Auditor  
Energy Balance Engineering  
Energy Conservation Advisor  
Energy Conservation Analyst  
Energy Conservation Consultant  
Energy Conservation Coordinator  
Energy Conservation Engineer  
Energy Conservation Manager  
Energy Conservation Program Manager

Energy Conservation Technical Specialist  
Energy Coordinator  
Energy Education Specialist  
Energy Efficiency Program Director/Engineer  
Energy Efficiency Consultant  
Energy Efficiency Coordinator  
Energy Efficiency Engineer  
Energy Efficiency Program Manager  
Energy Efficiency Specialist  
Energy Efficiency Technician Instructor  
Energy Facility Manager  
Energy Information Manager  
Energy Management Analyst  
Energy Management Consultant  
Energy Management Engineer  
Energy Management Quality Consultant  
Energy Management Representative  
Energy Management Specialist  
Energy Management/Environmental System Consultant  
Energy Manager  
Energy Performance Analyst  
Energy Plant Manager  
Energy Procurement Manager  
Energy Program Coordinator  
Energy Program Engineer  
Energy Program Manager  
Energy Program Specialist  
Energy Programming Technician  
Energy Project Development  
Energy Project Engineer  
Energy Project Manager  
Energy Projects Specialist  
Energy Resource Conservation Specialist  
Energy Resource Manager  
Energy Sales Consultant  
Energy Scientist  
Energy Service Engineer  
Energy Service Manager  
Energy Service Specialist  
Energy Services Account Executive  
Energy Services Advisor  
Energy Services Analyst

Energy Services Coordinator  
Energy Services Program Consultant  
Energy Services Project Developer  
Energy Services Project Manager  
Energy Services Representative  
Energy Services Specialist  
Energy Services Supervisor  
Energy Solutions Analyst  
Energy Solutions Consultant  
Energy Solutions Manager  
Energy Specialist  
Energy Supply Manager  
Energy Systems Engineer  
Energy Technician  
Energy Trader  
Energy/Environmental Consultant  
Energy/Mechanical Manager  
Energy/Resource Conservation Program Manager  
Energy/Utilities Engineer  
Energy/Utilities Manager  
Engineer  
Engineering & Environmental Services  
Engineering Analyst  
Engineering and Design Supervisor  
Engineering Consultant  
Engineering Development Director  
Engineering Director  
Engineering Manager  
Engineering Specialist  
Engineering Technician  
Engineer – Load Management  
Environmental Health, Safety & Security Manager  
Environmental Solutions Manager  
Environmental & Utilities Manager  
Environmental & Energy Manager  
Environmental Consultant  
Environmental Director  
Environmental Engineer  
Environmental Health & Safety Mgr.  
Environmental Manager  
Environmental Program Manager  
Environmental Project Manager  
Environmental Specialist  
Equipment Engineer

## F

Facilities & Compliance Analyst  
Facilities & Maintenance Manager  
Facilities and Construction Manager  
Facilities Consultant  
Facilities Coordinator  
Facilities Design & Construction  
Supervisor  
Facilities Design Engineer  
Facilities Electrical Engineer  
Facilities Electrical Systems Coordinator  
Facilities Energy Engineer  
Facilities Engineer

Facilities Environmental Manager  
Facilities HVAC Engineer  
Facilities Manager  
Facilities Operations Manager  
Facilities Performance Analyst  
Facilities Plant Engineer  
Facilities Project Manager  
Facilities Systems Specialist  
Facility Energy Conservation Manager  
Field Engineer  
Fuel Analyst

## G

Gas & Energy Coordinator  
Gas Management Service Analyst  
Gas Supply & Technology Engineer  
General Engineer  
Geo-Exchange Designer  
Geothermal Operations Manager  
Geothermal Designer  
Global Commodity Manager-Energy  
Global Director Energy & Sustainability  
Global Director – Energy & Plant  
Services

Global Energy & Climate Change  
Program  
Global Energy Director  
Global Energy Manager  
Global Energy Program Manager  
Global Energy Solutions Manager  
Global Environmental Engineer  
Global Energy Manager  
Green Building Engineer  
Greenhouse Gas Lead Assessor

## H

Health and Safety Manager  
Health, Safety, and Environmental  
Manager  
HVAC Design Engineer  
HVAC Designer  
HVAC Engineer

HVAC Facilities Manager  
HVAC Services Manager  
HVAC Systems Engineer  
HVAC Technician  
Hydro Geologist

## I

Indoor Environmental Consultant  
Industrial Engineer  
Industrial Gas Engineer  
Infrastructure Engineer

Installation Energy Manager  
Installation Manager  
Intelligent Building Specialist

## L

LEED AP  
LEED Performance Assurance Engineer  
Lighting Consultant

Lighting Design Specialist  
Lighting Engineer  
Load Analyst

## M

Maintenance Engineer  
Maintenance Manager  
Maintenance Planner  
Manager of Energy Initiatives  
Measurement & Verification Engineer  
Measurement & Verification Specialist  
Mechanical Design Engineer

Mechanical Designer  
Mechanical Engineer  
Mechanical Operations Manager  
Mechanical Project Engineer  
Mechanical Systems Engineer  
Mechanical Utilities Engineer

## N

National Energy Manager  
National Energy Services Manager

National Energy Solutions Specialist

## O

Operations & Energy Manager  
Operations & Maintenance Engineer  
Operations Analyst

Operations Engineer  
Operations Manager

## P

Performance Assurance Consultant  
Performance Assurance Engineer  
Performance Assurance Specialist  
Performance Contract Engineer  
Performance Contracting Energy Engineer  
Performance Engineer  
Performance Manager  
Plant Engineer  
Plant Manager  
Pollution Prevention Engineer  
Power Application Engineer  
Power Management Applications Engineer  
Power Optimization Engineer

Power Plant Manager  
Power Quality Engineer  
Power Quality Specialist  
Power Resources Manager  
Power Systems Engineer  
Power Utilization Engineer  
Power, Energy & Environmental Market Manager  
Procurement Analyst  
Procurement Manager (Electric & Gas)  
Product Manager  
Product Manager – Energy  
Production Engineer  
Professional Engineer  
Program Analyst

Program Director  
Program Director - Energy  
Program Manager  
Program Manager – Corporate Energy Services  
Program Manager – Energy Services  
Program Manager – Renewable Energy  
Project Analyst  
Project Coordinator  
Project Development Engineer

Project Developer  
Project Director  
Project Energy Engineer  
Project Energy Manager  
Project Engineer  
Project Manager  
Purchasing Director  
Purchasing Manager  
Purchasing Specialist

## Q

Quality Control Manager

Quality Engineer

## R

Refrigeration Engineer  
Reliability Engineer  
Renewable Energy Business Manager  
Renewable Energy Consultant

Resource Conservation Engineer  
Resource Conservation Manager  
Resource Efficiency Manager  
Retro-commissioning Engineer

## S

Safety & Environmental Coordinator  
Shipboard Resource Efficiency Manager  
Smart Grid Engineer  
Solar Energy Engineer  
Solar Energy Systems Designer  
Solution Design Specialist  
Solution Development Engineer  
Staff Engineer  
Staff Research Engineer  
State Energy Manager  
Storm water Planning & Engineer  
Supervisor  
Strategic Energy Analyst  
Surveillance Coordinator, Work Control

Sustainable Development Professional  
Sustainability Coordinator  
Sustainability Engineer  
Sustainability Leader  
Sustainability Manager  
Sustainable Building Analyst  
Sustainable Building Technologist  
Sustainable Design Specialist  
Sustainable Development Coordinator  
Sustainable Solutions Engineer  
System Applications Engineer  
System Control Operator  
Systems Analyst  
Systems Engineer

## T

Technical Advisor  
Technical Analyst  
Technical Consultant  
Technical Director  
Technical Engineer

Technical Facilities Assistant  
Technical Manager  
Technical Solutions Engineer  
Technical Specialist  
Test and Balance Engineer

## U

Utilities and Energy Director  
Utilities Engineer  
Utilities Manager

Utility Analyst  
Utility Conservation Representative

## W

Waste Reduction Consultant  
Wastewater Engineer  
Water & Energy Management Specialist  
Wind Power Engineer

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